

PATENT

Atty Docket No.: 200207272-1

App. Ser. No.: 10/789,744

REMARKS

Favorable reconsideration of this application is respectfully requested in view of the claim amendments and following remarks.

By virtue of the amendments above, claims 1, 4-7, 10-12, and 14 have been amended, and new claim 15 has been added. Claims 3 and 9 have been canceled without prejudice or disclaimer of the subject matter contained therein. Support for the amendments may be found in specification at page 5, lines 18-25. Claims 2 and 8 were previously canceled without prejudice or disclaimer of the subject matter contained therein. Accordingly, claims 1, 4-7, and 10-15 are currently pending, of which claims 1, 7, and 14 are independent.

No new matter has been introduced by way of the claim amendments; entry thereof is therefore respectfully requested.

Claim Rejection Under 35 U.S.C. §103

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in MPEP § 706.02(j):

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

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Therefore, if the above-identified criteria are not met, then the cited reference(s) fails to render obvious the claimed invention and, thus, the claimed invention is distinguishable over the cited reference(s).

Claims 1, 4-7, and 10-14

Claims 1, 4-7, and 10-14 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Ito et al. (U.S. Patent No. 5,097,189) ("Ito") in view of Carnagua (U.S. Patent No. 2,176,202) and Black et al. (U.S. Patent No. 3,780,652) ("Black"). This rejection is respectfully traversed for at least the following reasons.

Independent claims 1, 7, and 14 have been amended to include, *inter alia*, a planetary gear assembly having:

a sun gear driven by the drive motor;

a ring gear; and

a plurality of planet gears arranged between the sun gear and the ring gear, wherein, at the gear ratio resulting in a low carriage speed, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear.

By having the above-described features, the need to operate the drive motor at a low operational speed is negated, which enables the motor to operate more steadily.

Original specification at, from page 4, line 27, to page 5, line 3.

Ito fails to teach or suggest at least above-recited features. Instead, Ito is drawn to a recording apparatus in which a standard stepping motor is used as a driving source to reciprocate a carriage. Ito at Abstract. However, as conceded in the Office Action at

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page 3, Ito fails to teach or suggest a planetary gear assembly, where, at a gear ratio resulting in a low carriage speed, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear.

Carnagua fails to teach or suggest ways to overcome the above-discussed deficiencies of Ito. The Office Action at page 2 asserts that Carnagua discloses a centrifugal two-way clutch. However, while, in Fig. 1, Carnagua discloses a sun gear 15, planet gears 11, and a ring gear 20, Carnagua fails to teach or suggest that, at a gear ratio resulting in a low carriage speed, the sun gear 15 rotates, and the ring gear 20 is configured to rotate at a slower angular velocity than the sun gear 15. For example, the sun gear 15 is stationary, and thus, has no angular velocity. Carnagua at page 1, right column, lines 44-49, and page 3, right column, lines 15-20. Thus, the sun gear 15 does not rotate, and the ring gear 20 does not rotate at a slower angular velocity than the sun gear 15. Accordingly, Carnagua fails to teach or suggest a planetary gear assembly, where, at a gear ratio resulting in a low carriage speed, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear.

Black fails to teach or suggest ways to overcome the above-discussed deficiencies of Ito and Carnagua. The Office Action at page 5 asserts that Black discloses driving a printing system with a carriage using a two-way universal clutch. In Fig. 1, Black discloses a printing drum or cylinder assembly 22 and a web-advancing subassembly 28. However, Black fails to teach or suggest any planetary gear mechanism. Thus, Black fails to teach or suggest a planetary gear assembly, where, at a gear ratio resulting in a low carriage speed, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear.

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Thus, for at least the foregoing reasons, the proposed combination of Ito, Carnagua, and Black fails to teach or suggest all of the features of independent claims 1, 7, and 14 and their respective dependent claims 4-6 and 10-13. The Office Action has thus failed to establish that claims 1, 4-7, and 10-14 are *prima facie* obvious. The Examiner is therefore respectfully requested to withdraw the rejection of claims 1, 4-7, and 10-14 and to allow these claims.

Further, in addition to being allowable for their dependencies upon allowable independent claims as discussed above, dependent claims 4 and 10 are each allowable over the proposed combination of Ito, Carnagua, and Black for at least the following reasons.

Dependent claims 4 and 10 each recite that "operation of the drive motor at a high speed causes the centrifugal clutch to engage the ring gear causing the planet gears and the drive gear to be locked together such that they rotate as one with the sun gear resulting in a 1:1 gear ratio between the sun gear and the ring gear."

The proposed combination of Ito, Carnagua, and Black fails to teach or suggest the above-recited features of claims 4 and 10. For example, as set forth with respect to claim 1, Ito and Black fail to even disclose a planetary gear mechanism. In Carnagua, the sun gear 15 in Fig. 1 is stationary, as discussed above, and thus cannot rotate as claimed in claims 4 and 10.

For at least the above-discussed reasons, the proposed combination of Ito, Carnagua, and Black fails to teach the above-recited features of dependent claims 7 and 28. Thus, the Office Action has thus failed to establish that claims 4 and 10 are *prima facie* obvious.

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CENTRAL FAX CENTER****OCT 27 2008****Claim 14**

Claim 14 was rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Ito in view of Floyd (U.S. Patent No. 3,071,018) and Black. This rejection is respectfully traversed for at least the following reasons.

For at least the above-discussed reasons for claim 14 with respect to the proposed combination of Ito, Carnagua, and Black, Ito and Black fail to teach or suggest the above-discussed features of claim 14.

Floyd fails to teach or suggest ways to overcome the above-discussed deficiencies of Ito and Black for at least the following reasons.

First, Floyd fails to teach or suggest a planetary gear assembly, where, at a gear ratio resulting in a low carriage speed, the sun gear rotates and the ring gear is configured to rotate at a slower angular velocity than the sun gear. Instead, in Fig. 1, Floyd discloses a control shaft 80 connected to a lever means 99. However, Floyd *fails* to teach or suggest disclose any planetary gear assembly.

Second, even if the recording device of Ito were combined with the mechanical drive mechanism of Floyd as suggested in the Office Action, the combination would not have shown that switching between the gear ratio resulting in a high carriage speed and the gear ratio resulting in a low carriage speed occurs automatically based on an operational speed of the drive motor, as recited in claim 14.

For instance, Floyd *fails* to disclose or fairly suggest any mechanism for performing the above-discussed features of claim 14 automatically. Instead, Floyd discloses a control shaft 80 in Fig. 1 connected to a lever means 99 in the same figure.

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The axes of rotation for balls 10 and 11 in Fig. 2 can be changed through the use of the lever means 98 and 99 as shown in Figs. 5-10. As the axes of rotation of the balls 10 and 11 change by turning the lever means 98-99 as shown in Figs. 5-10, output speeds change directly proportionally to the angle of rotation of the control shaft 80, which angle in turn changes by turning the lever means 98 and 99. Floyd at column 5, lines 53-65, and, from column 5, line 72, to column 6, line 27. While Floyd does mention automatic rotation of shaft 80 (column 5, lines 28-33), Floyd *fails* to disclose or fairly teach any means for making the rotation of shaft 80 other than manually, especially one adapted for being combined with the printing device of Ito. Ito and Black *fail* to address the above discussed deficiency of Floyd. Thus, the proposed combination of Ito, Floyd, and Black fails to teach or suggest that switching between the gear ratio resulting in a high carriage speed and the gear ratio resulting in a low carriage speed occurs automatically based on an operational speed of the drive motor, as recited in claim 14.

Third, Ito and Floyd are *not combinable* with each other as suggested in the Office Action. Ito's printing device is designed so that the motor speed control circuit 24 in Fig. 3 of Ito is to close-loop control the rotational speed of the motor 6 (same figure) to thereby control "the rotational speed of the motor 6 to the speed in the high or low speed mode." Ito at column 4, lines 53-68. Further, Ito discloses that the "time which is required from the start of the carriage until the arrival at a constant speed running (rotational speed: 800 r.p.m.) in the high speed mode is set to about 60 msec. . . and the time which is required from the constant speed run until the stop of the carriage is set to about 60 msec." Ito at column 4, lines 6-17. Such close-loop control of the rotational speed of the motor 6 to the speed in the high or low speed mode and the required stop and

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start time of Ito *cannot be achieved* using the mechanical drive mechanism of Floyd, which requires a shut-down and a start-up of the input shaft 1 in Fig. 1 "whenever the speed control shaft is changed." Specification of Floyd, column 10, lines 22-27. Thus, Ito and Floyd are *not combinable* with each other as suggested in the Office Action.

Thus, for at least the foregoing reasons, the proposed combination of Ito, Floyd, and Black fails to teach or suggest all of the features of claim 14. The Office Action has thus failed to establish that claim 14 is *prima facie* obvious. The Examiner is therefore respectfully requested to withdraw the rejection of claim 14 and to allow this claim.

New claim 15

New claim 15 has been added to further define the scope of the invention. Claim 15 is allowable over the documents of record at least by virtue of its dependence upon allowable independent claim 14 and for the above-discussed reasons for the allowability of claims 4 and 10 over prior art.

Conclusion

In light of the foregoing, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should the Examiner believe that a telephone conference with the undersigned would assist in resolving any issues pertaining to the allowability of the above-identified application, please contact the undersigned at the telephone number listed below.

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Please grant any required extensions of time and charge any fees due in connection with this request to deposit account no. 08-2025.

Respectfully submitted,

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